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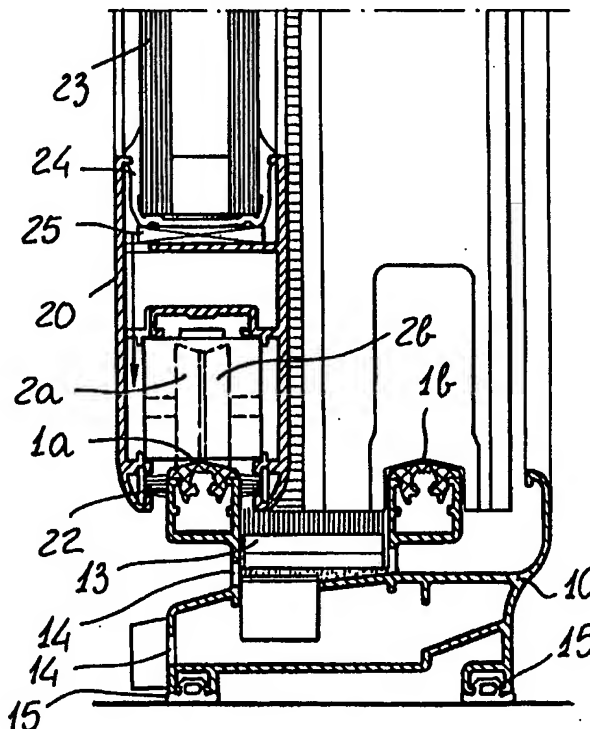
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(54) Title: SECTION MEMBER ASSEMBLY FOR MAKING SLIDING WING WINDOW AND DOOR FRAMES

(57) Abstract

The present invention relates to a section member assembly for making sliding wing window and door frames, which comprises a first series of section members for making fixed frames and/or movable frames with a substantially 45° angle cut, and a second series of section members for making fixed frames and/or movable frames with a substantially 90° angle cut. The fixed frame section members (10) are provided with a pair of longitudinal sliding rails (1a, 1b) for engaging wheels (2a, 2b) mounted on the movable frames (20). The pairs of rails of the fixed frames section members of the first series have a pitch equal to that of the rails of the fixed frame section members of the second series, in order to allow the fixed frames made by the section members of the first series and the movable frames made by the section members of either the first or second series to be easily coupled.



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## Description

### SECTION MEMBER ASSEMBLY FOR MAKING SLIDING WING WINDOW AND DOOR FRAMES

#### BACKGROUND OF THE INVENTION

The present invention relates to a section member assembly for making sliding wing window and door frames.

As known, the section members for making sliding wing window and door frames conventionally comprise two types of section members: a first type of section members which are coupled, at the angle regions of the fixed or movable frame, by a substantially 45°-cut, and a second type of section members which are coupled, at that same angle region, by a substantially 90°-cut, the angles being considered with respect to the longitudinal axis of the section members.

The above two mentioned types of section members involve different methods for making the fixed frames and movable frames.

In fact, the frames including an angle coupling of the section members by a 45°-cut can be assembled, together with a possible glass-chamber assembly, either directly in the making shop or at other places, whereas the frames constituted by section members provided with an angle region with a 90°-cut, can be exclusively assembled in the making shop.

This different procedure for assembling the above mentioned frames involve some drawbacks since the operator must separately control two different types of

products which, moreover, are differently constructed and must be differently installed.

Moreover, as it is necessary to replace a window or door movable frame made of a given type of section members, it is indispensable to use section  
5 members of the same type in order to make the new movable frame.

#### SUMMARY OF THE INVENTION

10 Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a section member assembly for making sliding wing window and door frames which allows to easily install, on fixed frames made by section members of  
15 either one or of the other of the two above mentioned types, movable frames made of section members pertaining to the other section member type.

Within the scope of the above mentioned aim, a main object of the present invention is to provide  
20 such a section member assembly which, owing to their use flexibility, can be engaged with one another by very simple and quick assembling operations.

Another object of the present invention is to provide such a section member assembly which includes  
25 easily interexchangeable section members thereby allowing to perform in a very simple and quick manner all of the operations which are necessary for replacing window and door frames.

A further object of the present invention is  
30 to provide such a section member assembly which can be made at a very competitive cost.

According to one aspect of the present invention, the above mentioned aim and objects, as well

as yet other objects, which will become more apparent hereinafter, are achieved by a section member assembly for making sliding wing window and door frames, comprising a first series of section members for making  
5 either fixed frames and/or movable frames with an angle cut of substantially 45° and a second series of section members for making either fixed frames and/or movable frames with a cut angle of substantially 90°.

The above mentioned fixed frame section  
10 members are provided with a pair of longitudinal sliding rails for engaging wheels mounted on the movable frames, characterized in that the pairs of rails of said fixed frame section members of said first series have a pitch equal to that of the rails of the  
15 fixed frame section members of said second series for allowing fixed frames made of section members of a series and movable frames made of section members of the first or second series to be easily coupled.

#### 20 BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the section member assembly according to the present invention will become more apparent hereinafter from the following detailed disclosure of said section  
25 member assembly, which is illustrated, by way of an indicative, but not limitative, example, in the figures of the accompanying drawings, where:

Figures 1a, 1b and 1c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and an enlarged cross-  
30 sectional view, substantially taken along the section line I-I of Figure 1a;

Figures 2a, 2b and 2c illustrate a two

sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line II-II of Figure 2a;

5                Figures 3a, 3b and 3c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line III-III of Figure 3a;

10              Figures 4a, 4b and 4c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line IV-IV of Figure 4a;

15              Figures 5a and 5b illustrate a two sliding wing frame and provided with a fixed bottom portion as respectively seen in a front elevation view and a cross-sectional view substantially taken along the section line V-V of Figure 5a;

20              Figures 6a and 6b illustrate a two sliding wing frame with a fixed bottom portion, respectively by a front elevation view and a cross-sectional view substantially taken along the section line VI-VI of Figure 6a;

25              Figures 7a, 7b and 7c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line VII-VII of Figure 7a;

30              Figures 8a, 8b and 8c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line VIII-

VIII of Figure 8a;

Figures 9a, 9b and 9c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line IX-IX of Figure 9a;

Figures 10a, 10b and 10c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line X-X of Figure 10a;

Figures 11a, 11b and 11c illustrate a two sliding wing door, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line XI-XI of Figure 11a;

Figures 12a, 12b and 12c illustrate a two sliding wing door, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line XII-XII of Figure 12a;

Figures 13a and 13b illustrate a two sliding wing door, respectively by a front elevation view and a cross-sectional view substantially taken along the section line XIII-XIII of Figure 13a;

Figures 14a and 14b illustrate a two sliding wing door, respectively by a front elevation view and a cross-sectional view substantially taken along the section line XIV-XIV of Figure 14a;

Figures 15a and 15b illustrate a two sliding wing door, respectively by a front elevation view and a cross-sectional view substantially taken along the section line XV-XV of Figure 15a;

Figures 16a, 16b and 16c illustrate a two sliding wing frame, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line XVI-XVI of Figure 16a;

Figures 17a, 17b and 17c illustrate a two sliding wing door, made of a fixed frame provided with angle coupling regions cut at 45° and movable frames provided with angle coupling regions cut at 90°, respectively by a front elevation view, a schematic top plan view and a cross-sectional view substantially taken along the section line XVII-XVII of Figure 17a:

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The section member assembly for making sliding wing window and door frames, according to the present invention, comprises a first series of section members for making either fixed frames and/movable frames, with an angle cut of substantially 45°, as clearly shown in Figures 1a to 8c, and a second series of section members for making either fixed frames and/or movable frames with an angle cut of substantially 90°, as shown in Figures 9a to 16c.

The fixed frame section members are provided with a pair of longitudinal rails 1a and 1b for slidably receiving thereon wheels 2a and 2b which are mounted inside the movable frames.

The pairs of rails 1a, 1b of the fixed frame section members of the first series have a pitch which is equal to that of the rails of the fixed frame section members of the second series, thereby allowing the fixed frames made of section members of a first series to be easily coupled to the movable frames made



of section members of either the first series or of the second series, depending on requirements.

More specifically, the rails 1a and 1b are made of extruded polyamide section members, thereby  
5 proving said rails with a very high duration and a colour which is held substantially unaltered in the time.

The section members constituting the rails 1a and 1b are firmly coupled to the fixed frame section  
10 members.

Figures 1a to 4c illustrate a frame made of section members of the first series and, more specifically, made of a fixed frame section member 10 constituting the bottom side of the fixed frame, and a  
15 fixed frame section member 11 for the top side of the fixed frame and for the two vertical sides or uprights, of the fixed frame.

The section member 10, to which the rails 1a and 1b are connected, is provided with a box-like  
20 construction and, in its region included between the two rails 1a and 1b, a recess is provided for engaging therein a sealing brush element 13. Moreover, inside the section member 10, a duct is formed which extends from the region between the rails 1a and 1b and leads  
25 to the outer front side of the section member 10 through suitable openings 14 for driving water possibly collected on the top side of said section member.

The section member 10 is provided, on its bottom side, with recesses for engaging therein  
30 corresponding seals or gaskets 15 by means of which the section member 10 bears on the masonry wall.

The section member 11, constituting the top side of the fixed frame, is provided with screw

adjusting elements 16, which are engaged in the masonry wall, thereby allowing the fixed frame to be located in a very accurate manner during its installation.

5 The section member 11 is also provided with a box-like construction and includes, on its outer front side, a coupling recess or seat 17 for a draining or dripping section member 18.

10 The movable frame shown in Figures 1a to 4c can be made of two movable frame section members, indicated by the reference numbers 20 and 21. The movable frame forming section members 20 or 21 have a box-like construction, from which extend two parallel legs defining, therebetween, a hollow at the centre of which are mounted the wheels 2a and 2b provided for  
15 sliding along the rails 1a or 1b.

20 The two legs of the section member 20 are provided with suitably radiused end portions, inside which are defined seats for housing therein sealing brush elements 22, engaging on the two outer sides of the rails 1a or 1b.

The section member 20, on the side thereof opposite to the hollow housing the wheels 2a and 2b, is provided with a seat for a glass-chamber 23, bearing, through a gasket 24, on a spacing strip 25.

25 The section member 21 is substantially constructed like the section member 20, with the difference that the hollow for said glass-chamber 23 is delimited, on a side thereof, by a leg made in a single-piece with said section member and, on the other  
30 side thereof, by a glass-restraining section member 26 which can be snap engaged with the section member 21.

The section member 21 is also provided with radiused end portions with recesses or seats for

receiving therein sealing brush elements 27 engaging on two opposite sides of a portion of the fixed frame section member 11.

Figure 4c is a cross-sectional view illustrating the two central uprights of the two movable frames of the door or window frame. Said uprights also comprise a section member 20 or 21 thereon are snap applied additional section members 28 which are so contoured as to define, in cooperation with one another, at the mutually facing regions of the two uprights, a labyrinth path 29. At said labyrinth path 29, the additional sectional members 28 are provided with seats or recesses for sealing brush elements 30, engaging with the adjoining movable frame face. Thus, as the door or window frame is closed, a proper sealing thereof will be obtained.

Figures 5a to 6b illustrate a two sliding wing window or door frame, the wings of which can slide on a fixed portion 31.

The fixed frame comprises a section member 32, forming the top side of the fixed frame and also provided with a seat or recess for a sealing brush element 13, at that region included between the two sliding wings, as well as with a further seat for a dripping section member 18, as stated.

The section member 32 is provided, near the top end portion thereof, with gasket seats 33, which can bear against the masonry wall. The section member 32 is also provided with a screw adjustment device 16, as already disclosed.

The fixed frame side connecting the two sliding wings to the fixed portion 31 is formed by a fixed frame section member 34 with connecting section

member 35 at its middle region. With the section member 34 is associated a glass restraining section member 36, for the glass-chamber 37 of the fixed part 31.

5        Figures 7a to 7c illustrate a two sliding wing frame similar to the frame shown in Figures 1a to 1c, with the difference that the movable frame is made of a section member 21 coupled to a glass-restraining section member 26.

10        On the bottom of the cavity holding therein the bottom edge of the glass-chamber 23 is arranged a bearing section member which snap engages in a suitable seat defined in the section member 21.

15        Figures 8a, 8b and 8c show the central uprights of a two sliding wing frame, likewise to Figures 4a, 4b and 4c, with the difference that said uprights are made of reinforced or stiffened section members 20a.

20        With respect to the elements shown in Figures 5a to 8c, which correspond to the elements disclosed with reference to Figures 1a to 4c, the same reference numbers have been used for simplicity.

      Figures 9a to 12c illustrate a two sliding wing door or window frame, made of section members of the second series.

25        More specifically, the bottom side of the fixed frame is constituted by a section member 40 provided with a box-like body to which the rails 1a and 1b are affixed.

30        Even in this case, in that region between the two rails 1a and 1b is defined a seat housing a sealing brush element 41.

      Moreover, along the top side of the section member, near the region between the two rails 1a and

1b, is defined a duct leading to the outer front side of the section member through suitable openings or slots 42 for draining water susceptible to be collected on the top face of said section member 40.

5           Near the bottom end portions thereof, the section member 30 is provided with gasket seats 43, engaging with the masonry wall.

10           Figures 10c illustrate a section member 44 constituting the top side of the fixed frame. Said section member 44 is also provided with a box-like construction and includes, likewise to the section members 11 and 32 of the first series, screw adjusting elements 16 for allowing the fixed frame to be properly arranged as it is installed.

15           The section member 44 is provided, at its top end portion, with two gasket seats 45, engaging with the masonry wall.

20           Figure 11c illustrates another fixed frame section member, generally indicated by the reference number 46, also having a box-like construction, and which constitutes the upright of the fixed frame. Said section member 46 is provided with a pair of extensions 47, on its inside side, thereagainst the sealing brush elements 48 of the movable frame engage.

25           The section member 46, as provided for the section member 11, can also be provided with a screw adjusting element 16, which can engage with the vertical side of the wall, in order to facilitate the installation of the fixed frame.

30           The movable frame shown in Figures 9a to 10c also comprises a top side and a bottom side, made of a same section member 50. Said section member 50 has a substantially H-shape and houses, in its embodiment as

bottom side of the movable frame, the wheels 2a and 2b engaging with their respective rails 1a or 1b.

In the other hollow defined inside the section member 50 is engaged, through the interposition  
5 of a gasket 52, the edge portion of a glass-chamber 53.

On the bottom of the hollow for the glass-chamber 53 of the section member 50, forming the bottom side of the movable frame, is engaged a spacing strip  
54.

10 The section member 50, forming the top side of the movable frame, is moreover provided, at the top end portions thereof, with sealing brush elements 56, engaging against a bottom extension of the fixed frame section member 44.

15 Figure 11c illustrates another movable frame section member, generally indicated by the reference number 57, constituting one of the two uprights.

Said section member 57 is suitably reinforced and is provided with a substantially rectangular box-  
20 like cross-section with two extensions on the opposite sides of the cross-section. Two of said extensions are provided with said sealing brush elements 48 engaging against the extensions 47 of the fixed frame section member 46, whereas the other two extensions define the  
25 cavity in which is engaged the edge portion of the glass-chamber 53, through the interposition of a gasket 52.

Figure 12c illustrates a section members 60 which can be used for making the other upright of the  
30 two movable frames. The section members 60 are provided with an extension 61 which can be engaged inside a hollow, with a bottom gasket 62, defined by said section member 60 of the other upright. Even in this

case, the overlapping regions of the extensions 61 provides a sort of labyrinth path efficiently opposing to any air passage through the frame.

5 In addition to the disclosed sealing elements, the section member 60 is provided, on its side provided for facing the upright of the other movable frame, with a sealing brush element 65.

10 Figures 13a to 14b illustrate a two sliding wing door with a top portion which can be opened like a wing, formed by fixed frame section members, generally indicated by the reference numbers 70 and 71 and movable frame section members 72 with a related glass restraining element 73.

15 The movable frame of the sliding door is constituted by section members 50 for making the bottom and top side thereof and by a middle section member, horizontally extending, and generally indicated by the reference number 75.

20 Said section member 75 has a box-like construction with a substantially H shape.

With respect to the other elements shown in Figures 13a to 15b, which have been already disclosed with reference to the preceding figures, the same reference numbers have been used for simplicity.

25 It should be apparent that the top portion of the frame comprises a tilting wing, generally indicated by the reference number 90, which is pivoted to the fixed frame section member 71.

30 The inner side of the fixed frame of the sliding part is formed by a further section member 80, on which the rails 1a and 1b are affixed.

Figures 16a, 16b and 16c illustrate a modified embodiment of the bottom fixed frame section

member, generally indicated by the reference number 40, which is provided, on its outer front side, with an additional section member 83 for supporting thereon a mosquito curtain frame 84.

5               With respect to the other elements of these figures, which have been already disclosed with reference to the preceding figures, the same reference numbers have been used for simplicity.

10              Figures 17a, 17b and 17c illustrate a possibility of coupling a movable frame made of section members of the second series, for example the movable frame shown in Figures 9a to 12c, to a fixed frame made of section members of the first series, for example of the type shown in Figures 1a to 3c.

15              From the above disclosure and the observations of the figures of the accompanying drawings, it should be apparent that the invention fully achieves the intended aim and objects.

20              In particular, the fact is to be pointed out that a section member assembly has been provided, including different types of section members, i.e. a first type of section members providing an angle cut of substantially 45° and a second type of section members, providing an angle cut of substantially 90°, which  
25              allows to easily engage the movable frames made of section members of the first type and fixed frames made of section members of the other types, thereby allowing a great operating flexibility both in making window and door frames and in performing replacement operations.

30              In practicing the invention, the used materials, as well as the contingent size and shapes can be any, according to requirements.



**CLAIMS**

1. A section member assembly for making sliding wing window and door frames, comprising a first series of section members for making fixed frames and/or movable frames with an angle cut of substantially 45° and a second series of section members for making fixed frames and/or movable frames with an angle cut of substantially 90°, said fixed frame section members including a pair of longitudinal sliding rails for engaging wheels mounted on the movable frames, characterized in that the pairs of rails of the fixed frame section members of the first series have a pitch equal to that of the rails of the fixed frame section members of the second series to allow fixed frames made of section members of a series to be coupled to movable frames made of section members of either the first or the second series.

2. A section member assembly, according to Claim 1, characterized in that said rails comprise extruded polyamide section members coupled to the fixed frame section members either of the first and/or the second series.

3. A section member assembly, according to Claim 1, characterized in that said wheels are engaged at the centre of a cavity of the movable frame section member forming the bottom side of the movable frame.

4. A section member assembly, according to one or more of the preceding claims, characterized in that the fixed frame section members of the first series and/or the second series are provided, at the region thereof included between the two rails, with a

seat for engaging therein a sealing brush element provided for engagement with the top side and bottom side of the movable frame.

5       5. A section member assembly, according to one or more of the preceding claims, characterized in that the fixed frame section members of the first series and/or of the second series are provided, on the outer side thereof, with screw adjusting elements for properly locating the fixed frame of the window or door  
10       frame.

      6. A section member assembly, according to one or more of the preceding Claims, characterized in that the fixed frame section member of the first series are provided, on the outer front side thereof, with a  
15       coupling seat for a dripping section member.

      7. A section member assembly, according to one or more of the preceding claims, characterized in that the movable frame section members of the first series comprise additional section members, which can  
20       be snap engaged on the section members forming the central uprights of the movable frames, and that the additional section members are designed for cooperating with a like additional section member, mounted on the movable frame section member constituting the upright  
25       of the other movable frame of a same window or door frame in order to define a sealing labyrinth, said additional section members including, at the region thereof defining said labyrinth, sealing brush elements provided for engagement with the other movable frame.

30       8. A section member assembly, according to one or more of the preceding claims, characterized in that the movable frame section members of the first series are provided with an engagement seat for

removably engaging therein a glass-restraining section member.

9. A section member assembly, according to one or more of the preceding claims, characterized in that the fixed frame section members provided for forming the bottom side of the fixed frame, comprise a water outlet duct extending on the top side of the fixed frame section member and leading to the outer front side of the window or door frame.

10. A section member assembly, according to one or more of the preceding claims, characterized in that the movable frame section members forming said central uprights of said movable frames are reinforced.

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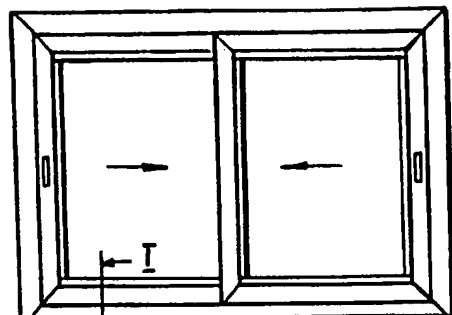


FIG. 1a

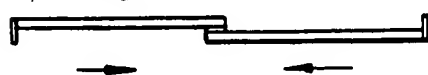


FIG. 1b

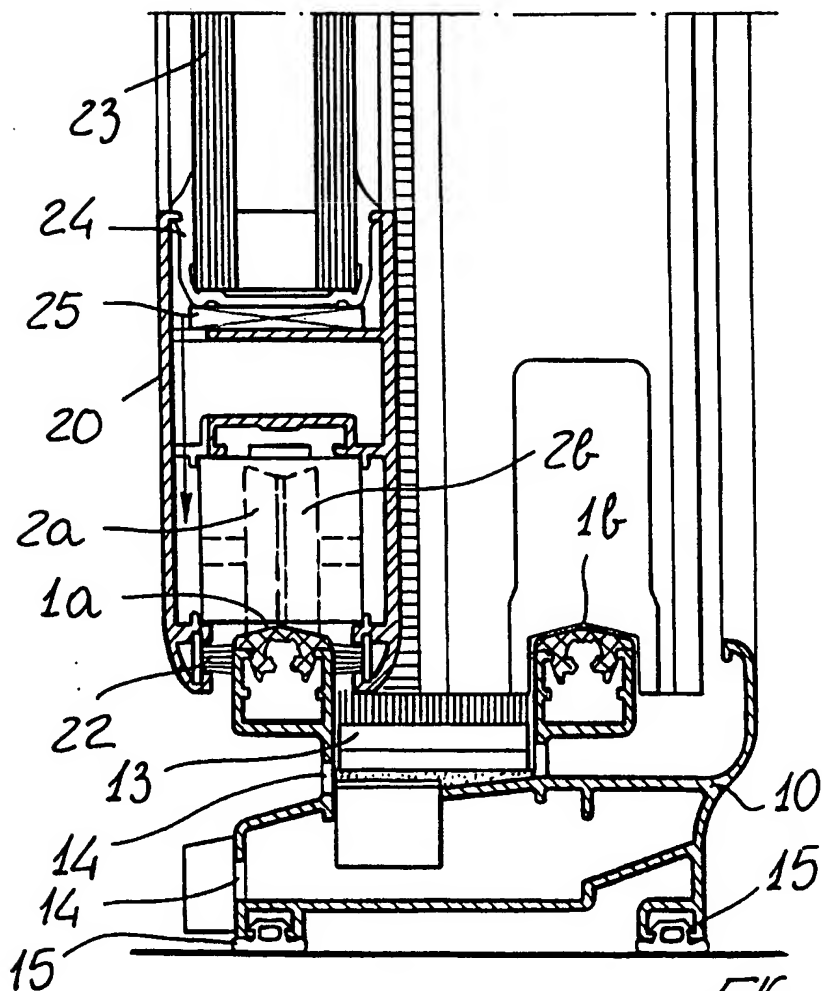


FIG. 1c

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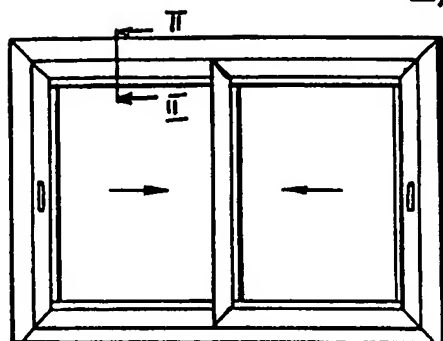


FIG. 2a



FIG. 2b

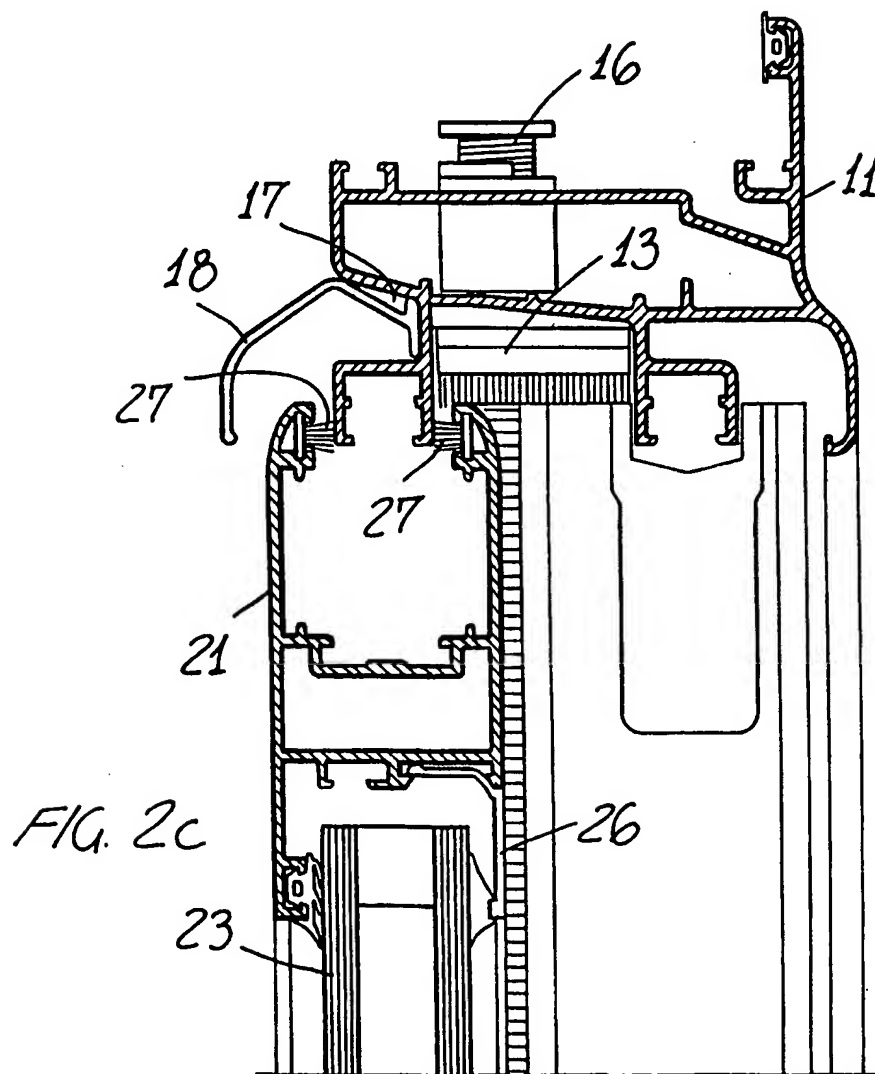


FIG. 2c

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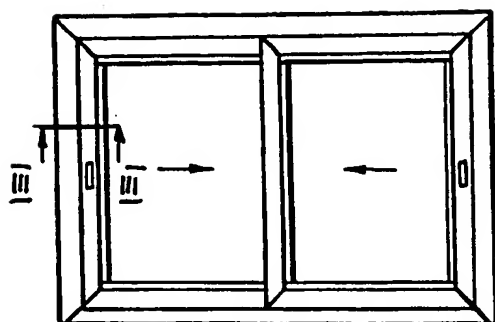


FIG. 3a



FIG. 3b

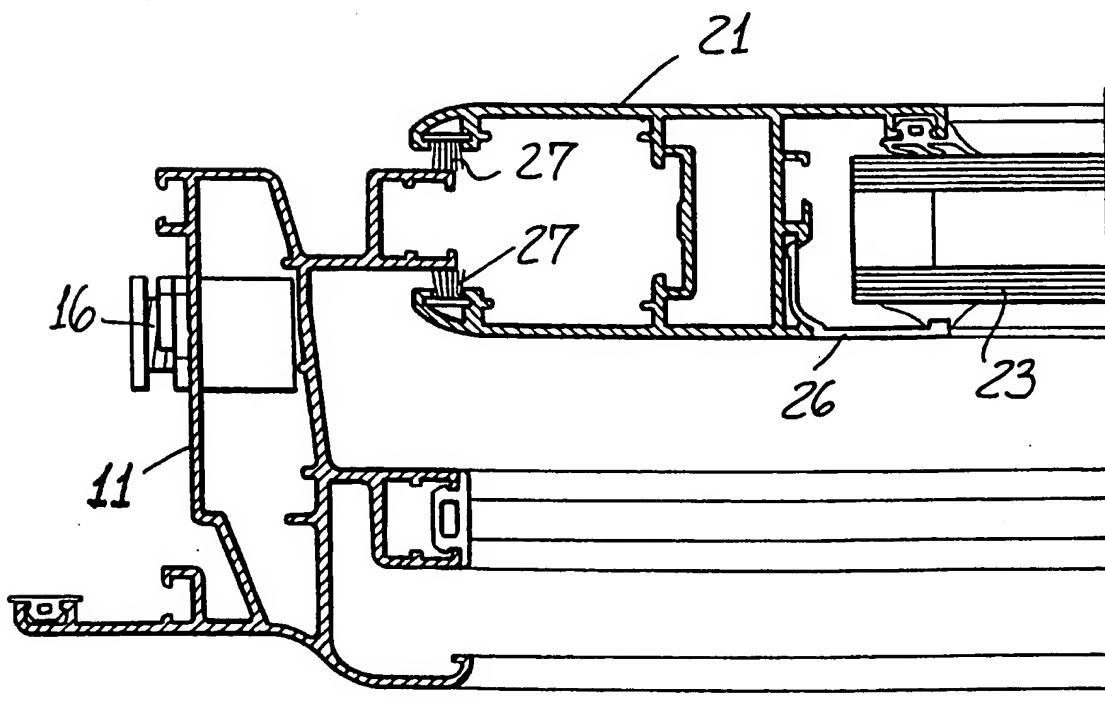


FIG. 3c

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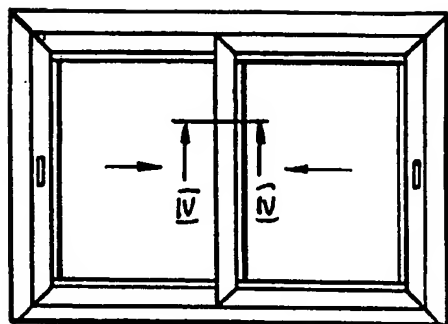


FIG. 4a

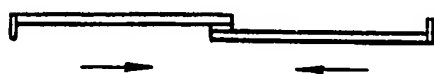


FIG. 4b

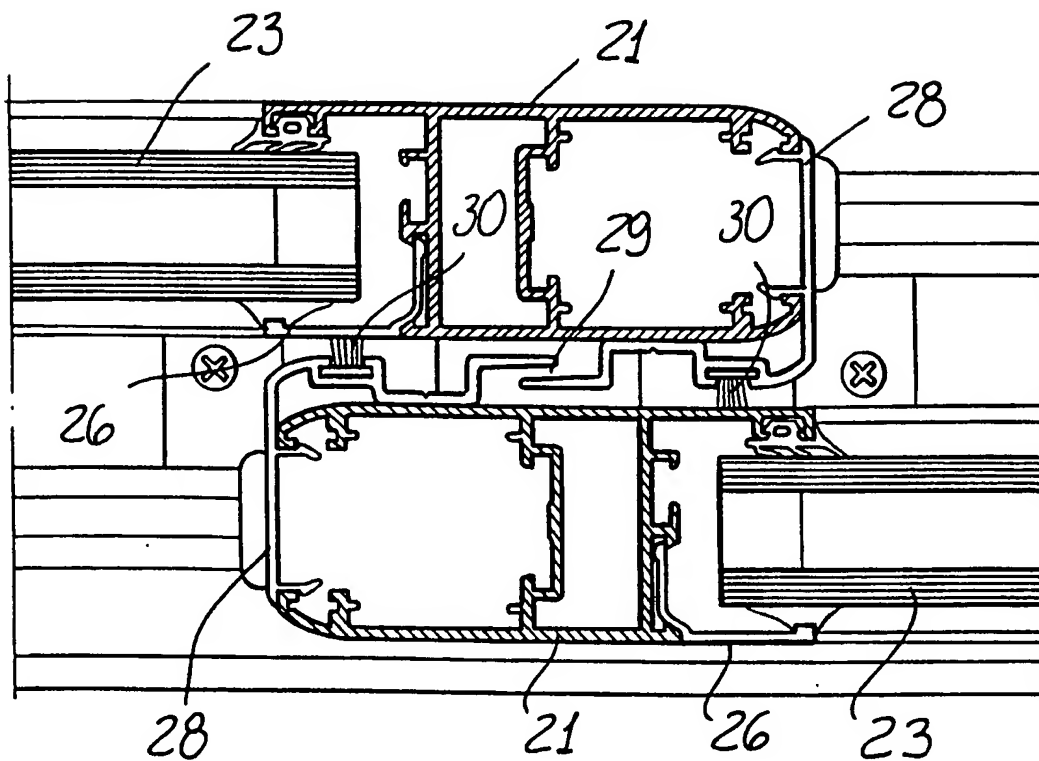


FIG. 4c

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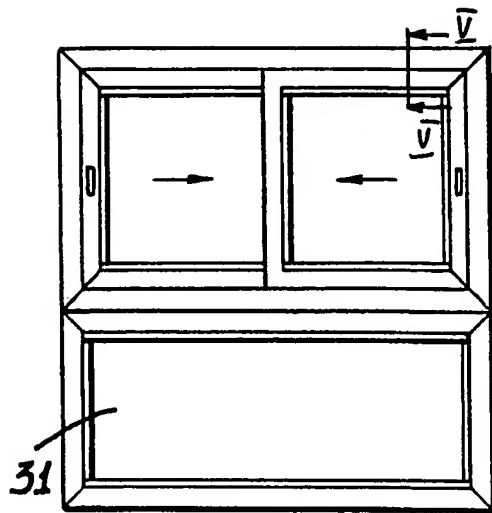


FIG. 5a

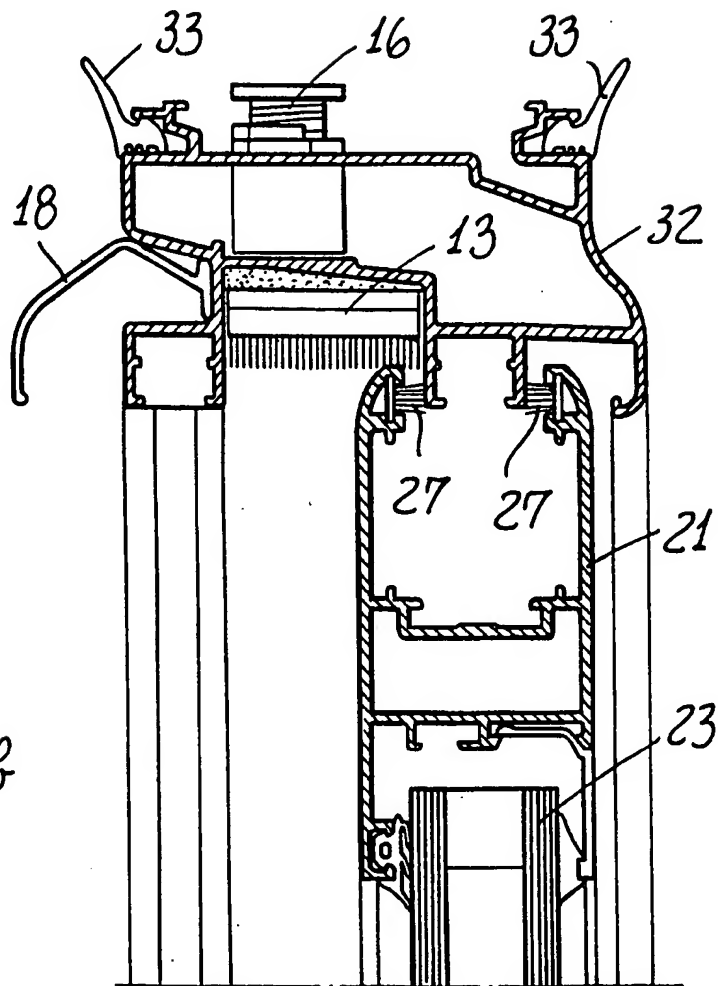


FIG. 5b



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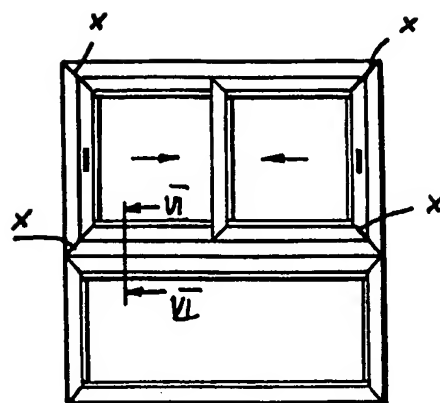


FIG. 6a

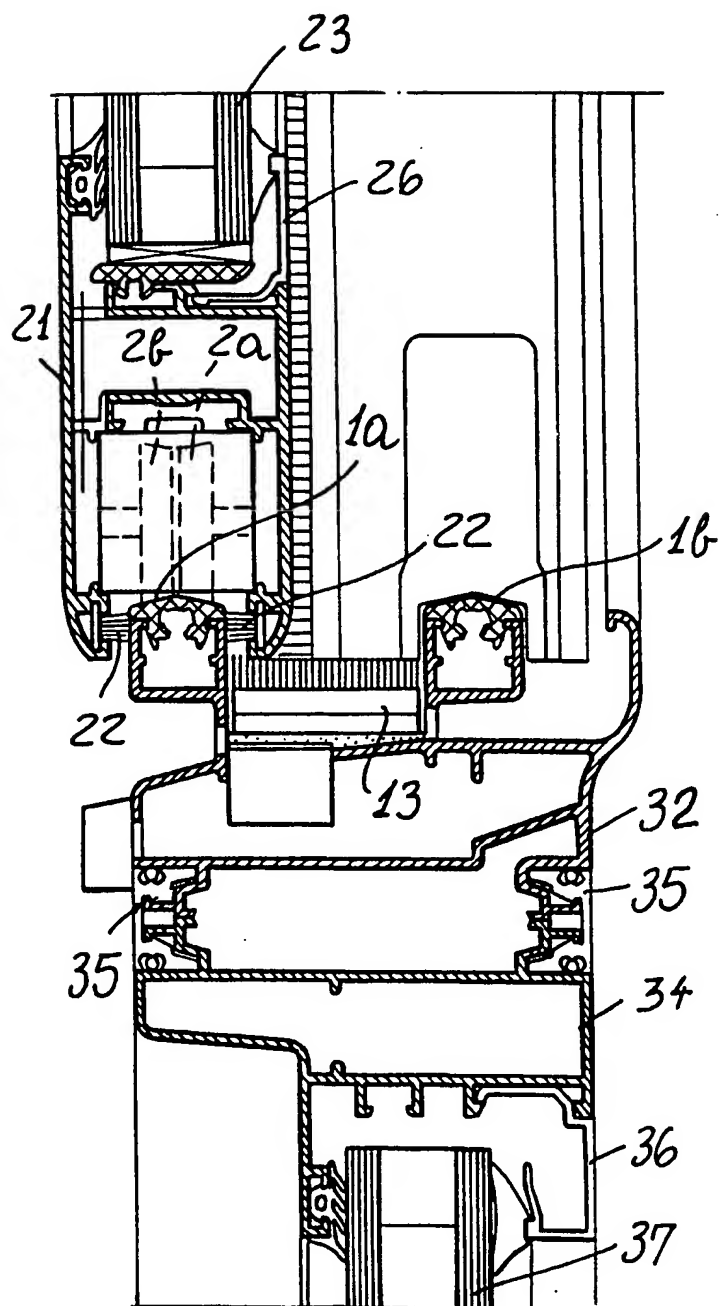
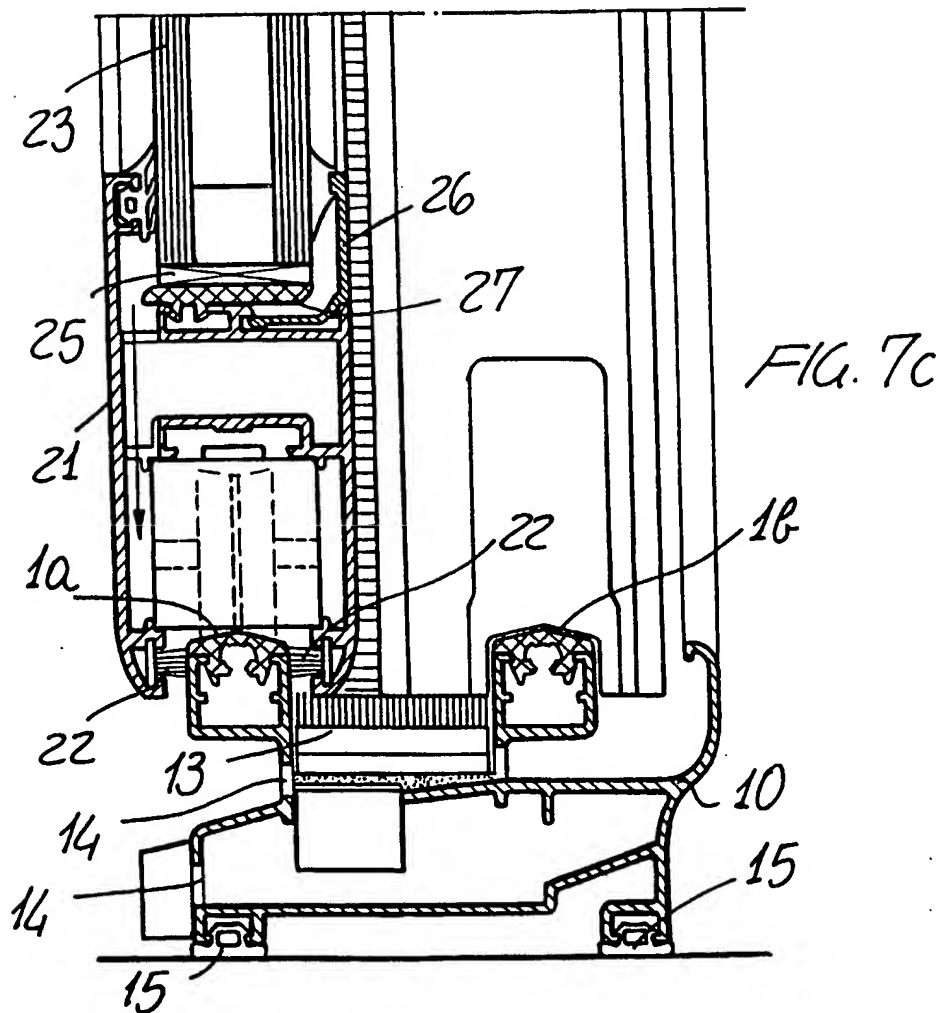
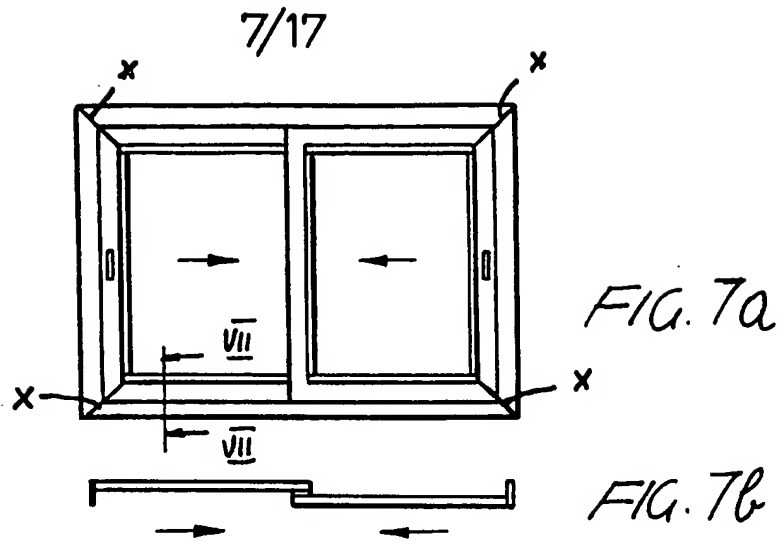


FIG. 6b



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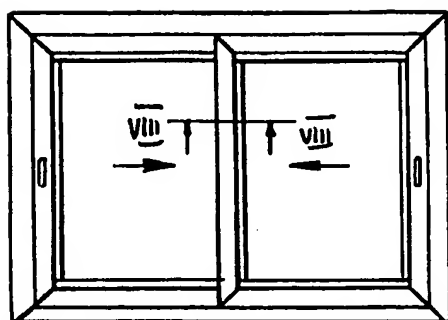


FIG. 8a



FIG. 8b

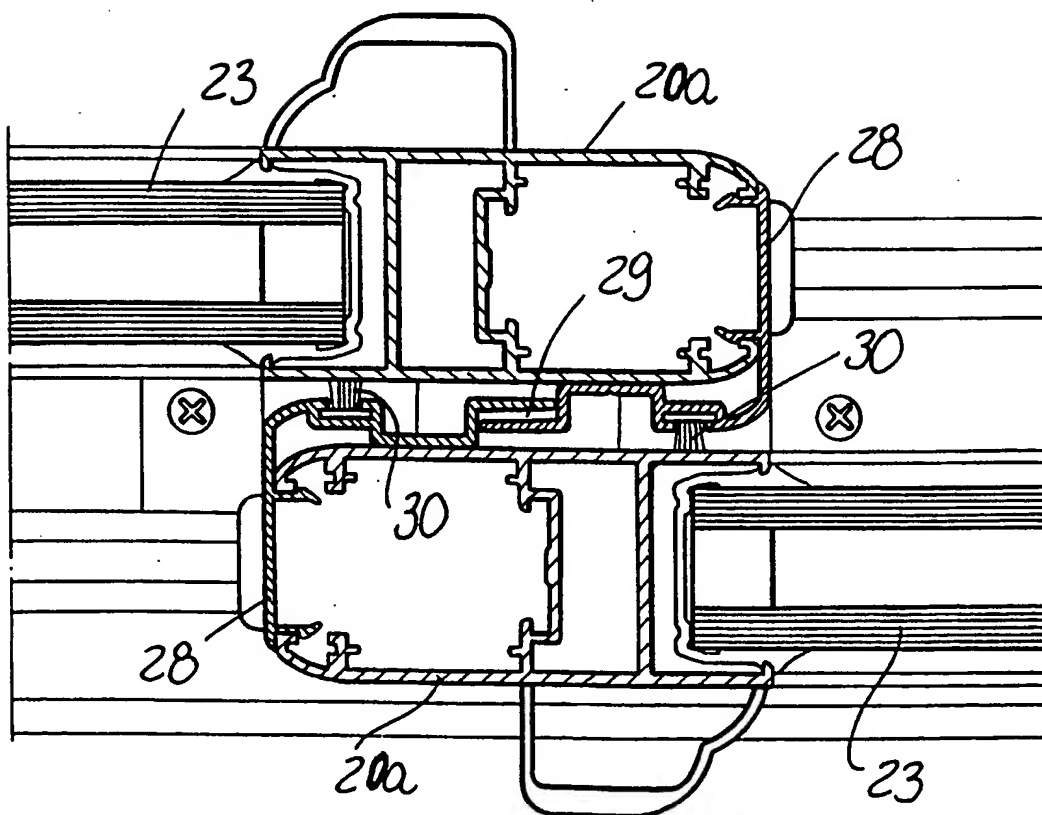


FIG. 8c

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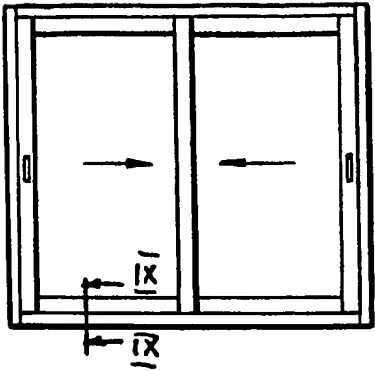


FIG. 9a

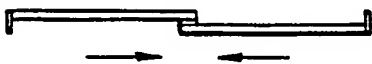


FIG. 9b

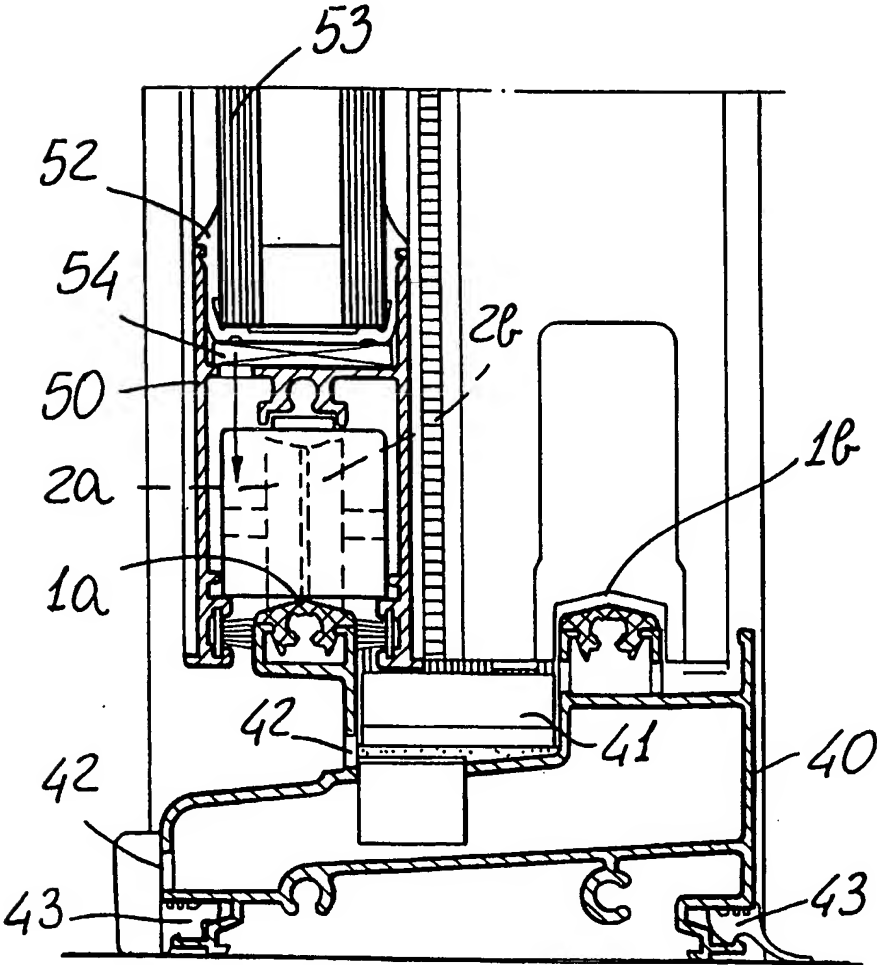


FIG. 9c

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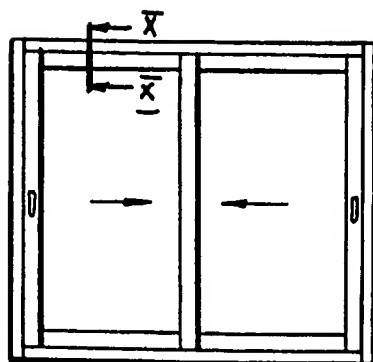


FIG. 10a

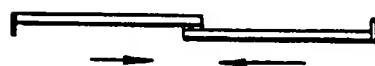


FIG. 10b

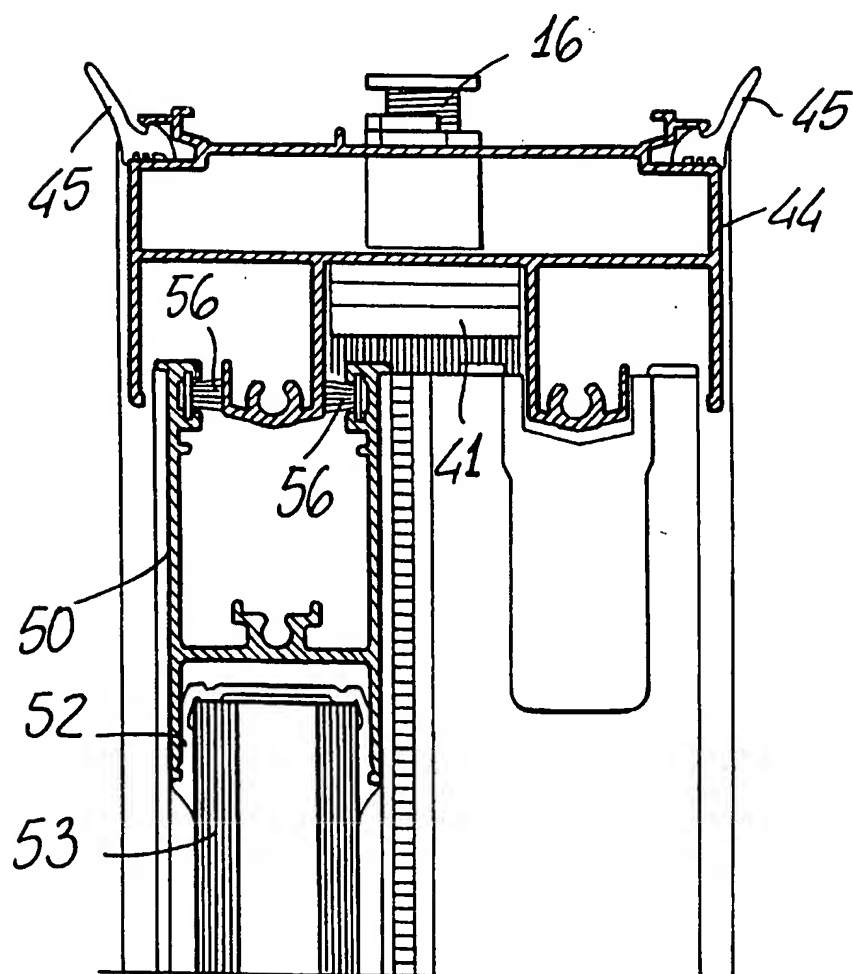


FIG. 10c

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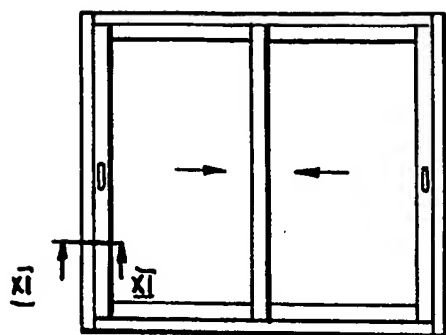


FIG. 11a

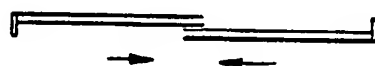


FIG. 11b

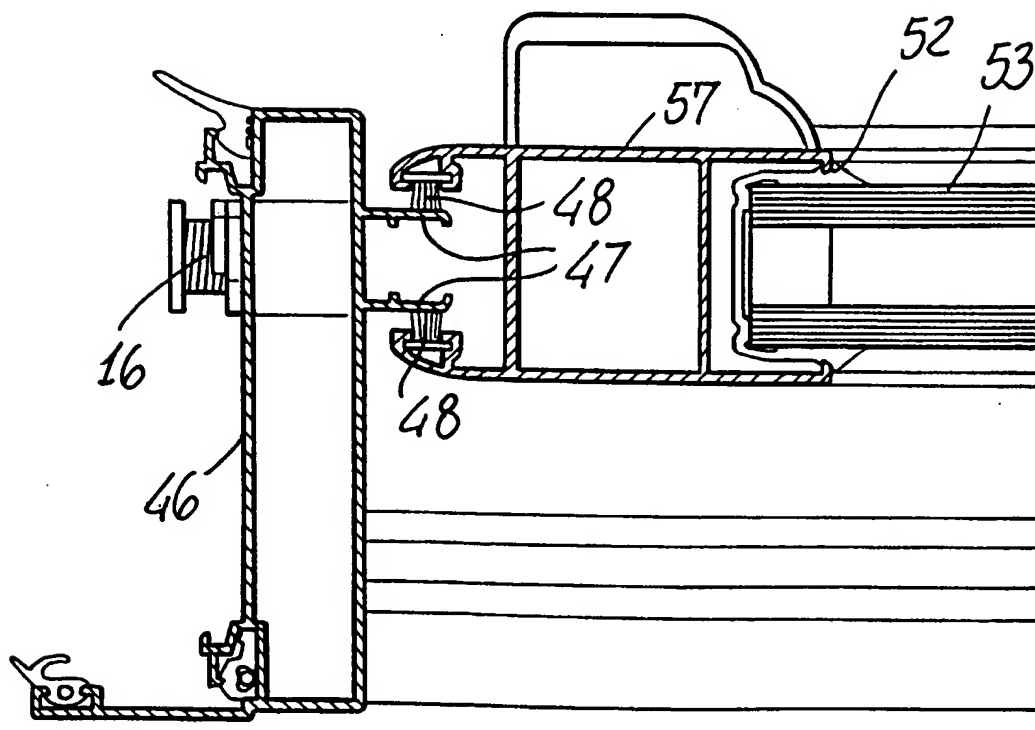


FIG. 11c

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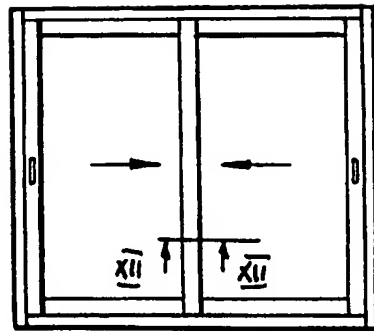


FIG. 12a

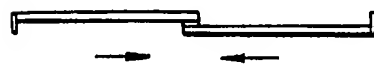


FIG. 12b

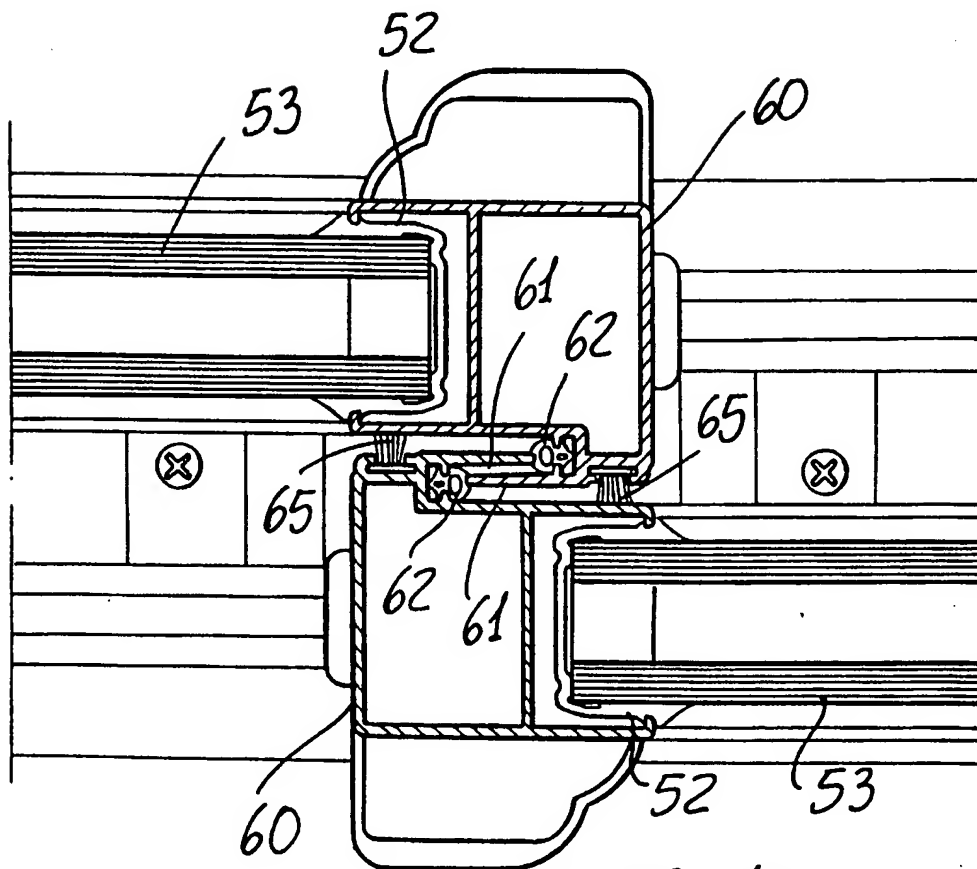


FIG. 12c

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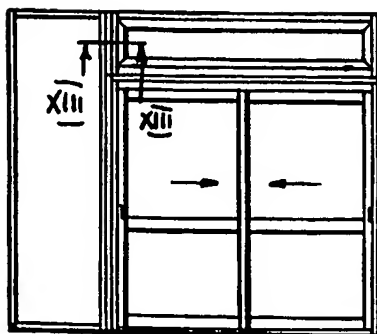


FIG. 13a

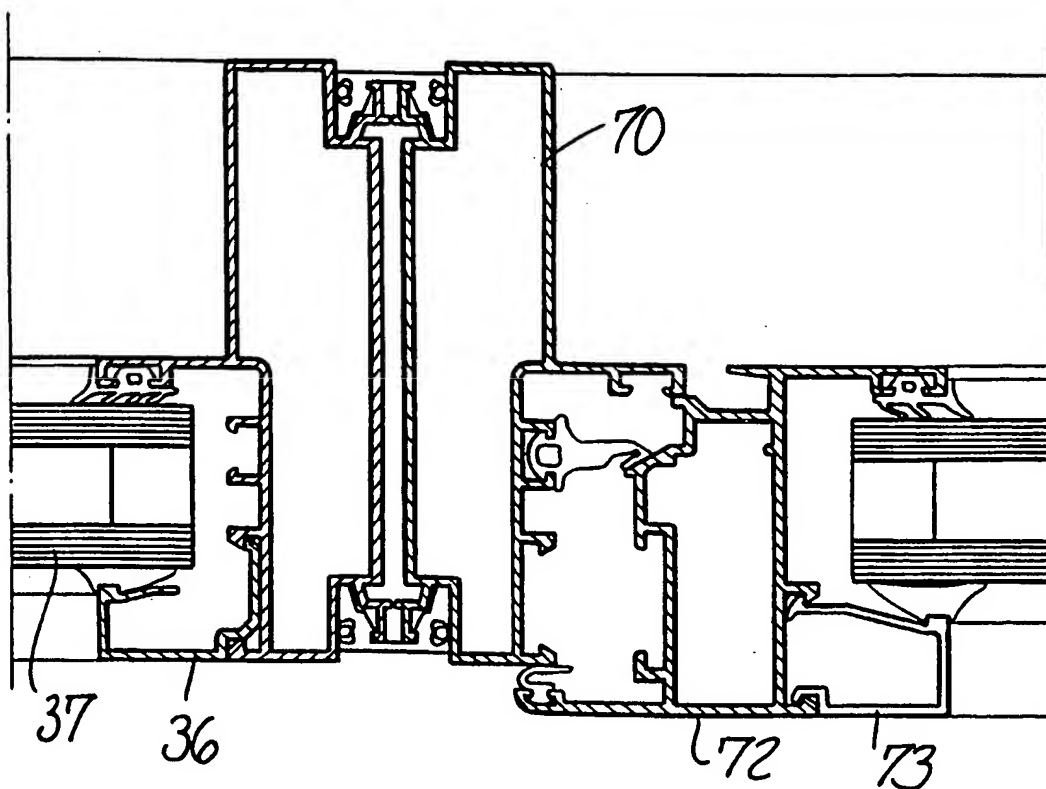


FIG. 13b



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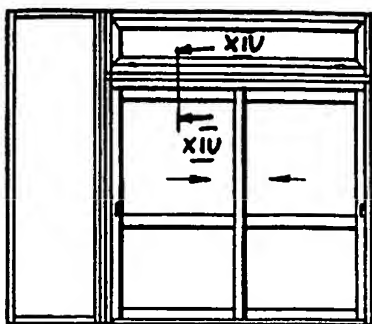


FIG. 14a

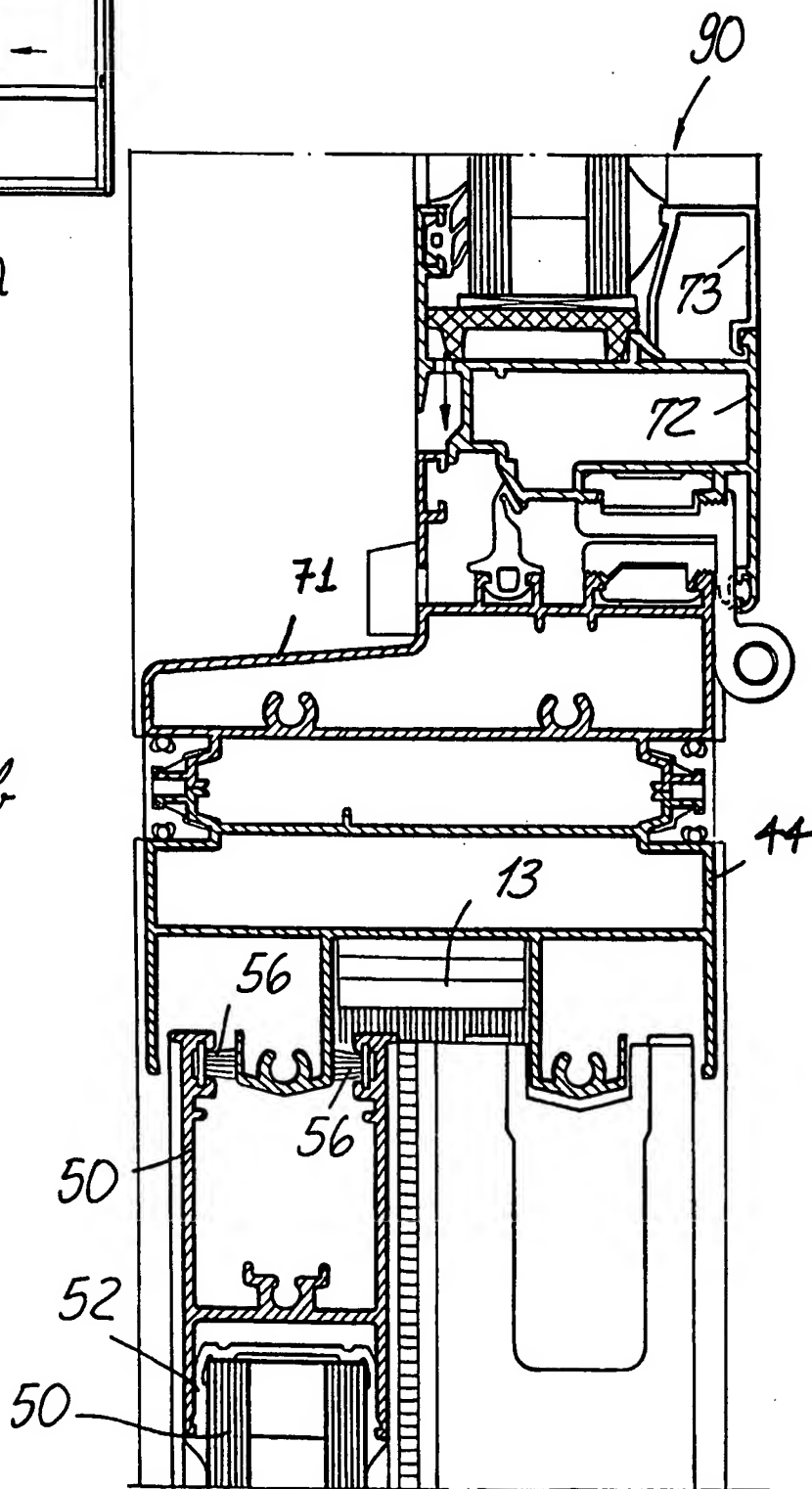


FIG. 14b

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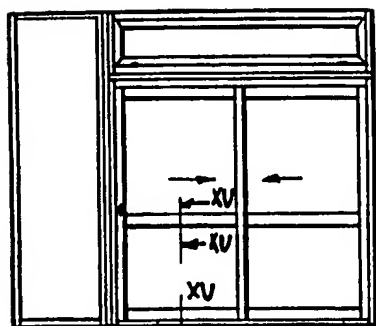


FIG. 15a

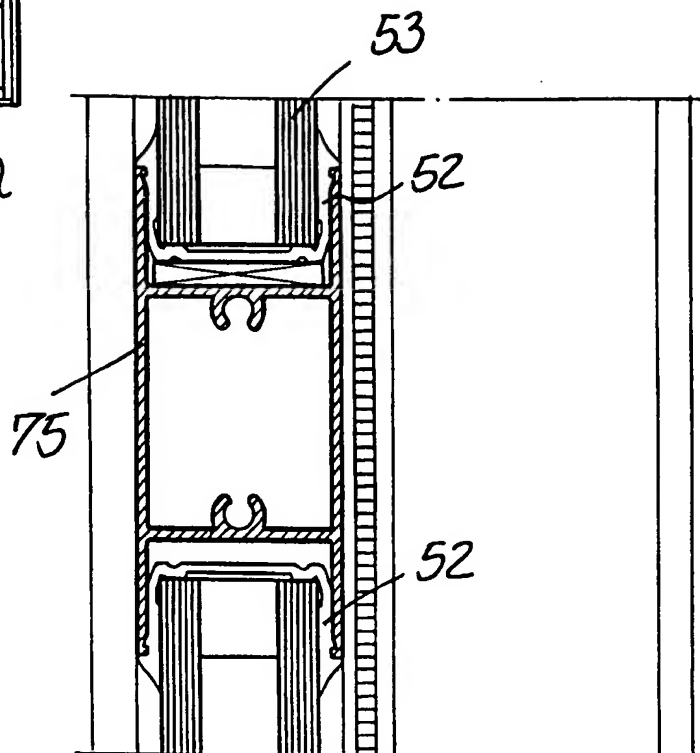
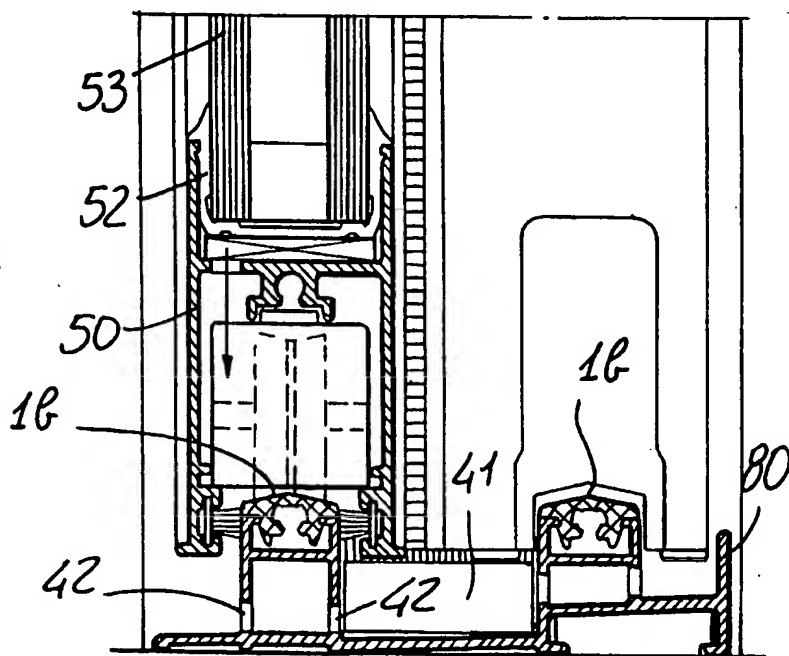


FIG. 15b



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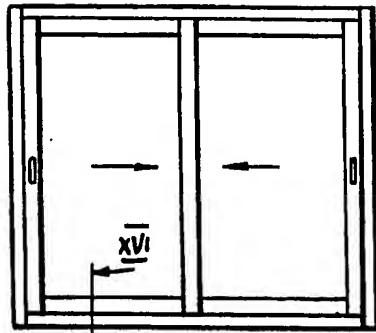


FIG. 16a

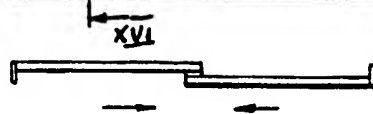


FIG. 16b

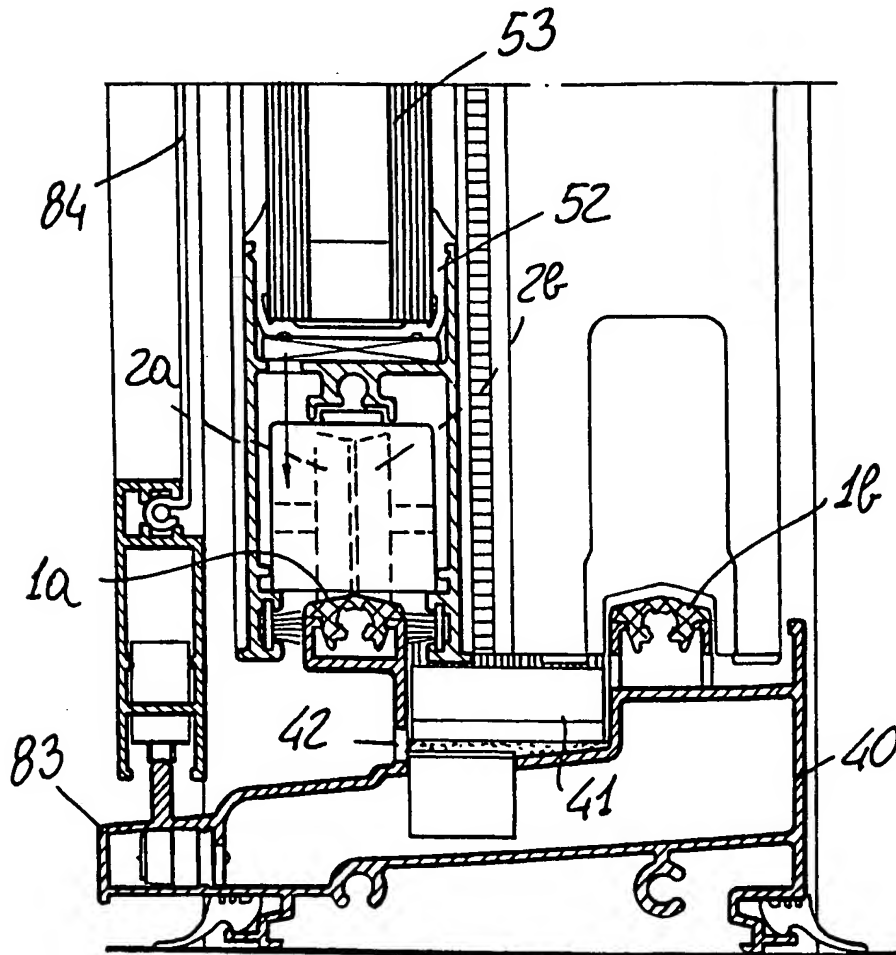


FIG. 16c

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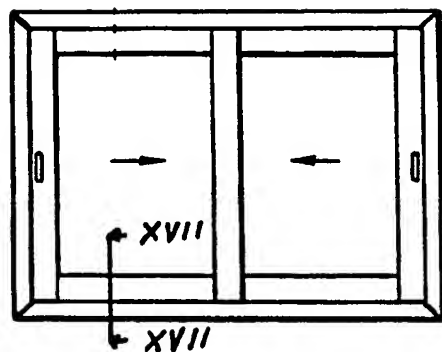


FIG. 17a

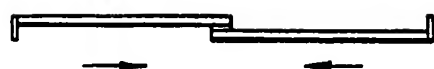


FIG. 17b

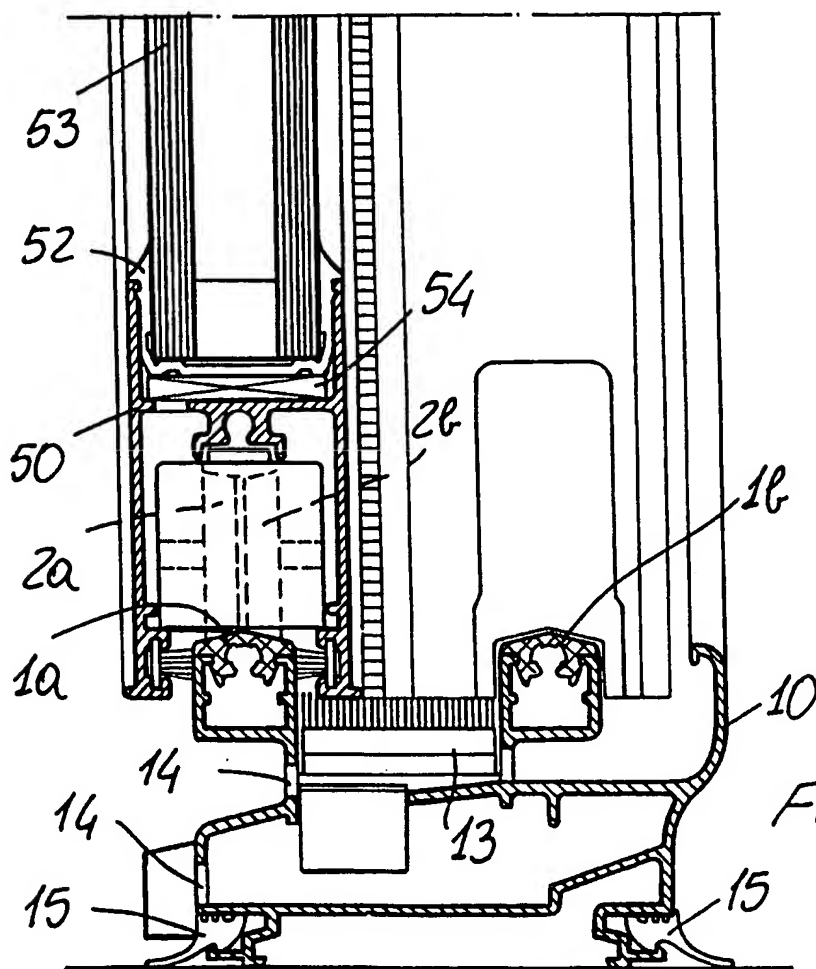


FIG. 17c

# INTERNATIONAL SEARCH REPORT

Int. .lional Application No

PCT/IT 98/00051

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 E06B3/46 E06B3/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 268 144 A (AUBIN PHILIPPE) 14 November 1975	1,3,8
Y	see the whole document	2,4-7,9,10
Y	EP 0 485 349 A (METRA METALL TRAFILATI ALLUMIN) 13 May 1992	2,4-7,9
A	see the whole document	1,8
Y	US 4 227 346 A (KUBIK HANS) 14 October 1980 see column 5, line 60 - line 61 see column 6, line 1 - line 8; figures 4-6	10
A	FR 2 554 498 A (ALL CO SPA) 10 May 1985 see page 3, line 31 - page 4, line 26; figures	1,10
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

22 June 1998

Date of mailing of the international search report

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00051

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FR 2 669 674 A (HYDRO ALUMINIUM SYSTEMS SPA) 29 May 1992  see page 8, line 22 - line 29; figures 4,5,22-26</p> <p>-----</p>	1

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Information on patent family members

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